Used Oil Filter Collection Pilot Program Report

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EXECUTIVE SUMMARY

Over 19 million oil filters are sold each year to people who change their own motor oil. It is estimated that 90 percent of these are discarded, along with the used oil they contain[1]. This practice poses a significant threat to surface and ground waters from residual used oil, and also results in a significant loss of natural resources (over 7,000 tons of steel and over 1 million gallons of used oil per year). For these reasons, the California Oil Recycling Enhancement Act (Act) was amended in January of 1995 to allow the California Integrated Waste Management Board (CIWMB) to establish a two-year used oil filter collection pilot program. A pilot program allowed the CIWMB to ascertain the issues surrounding the collection of used oil filters from the public, and to assess the need for a statewide program.

There are few opportunities for the general public to recycle filters. There is also a lack of public knowledge of the recyclability of filters and the environmental impact of illegal disposal. The principal barrier to establishing and maintaining collection opportunities is the cost of hauling. Local governments lack the resources necessary to meet this challenge and businesses and industry are reluctant to support collection (because of significant costs).
A statewide effort is needed to address the used oil filter disposal problem and meet the needs of Californian's who change their own motor oil and filters. A $1,000,000 level of funding is reasonable based on the proportion of used oil contained in discarded filters. An administrative solution allocating $800,000 of local government grant funds to address filter collection and $200,000 of used oil funds to the CIWMB for administration is recommended.

INTRODUCTION

The CIWMB has played a role in filter recycling through oversight of local government household hazardous waste collection programs and used oil collection program efforts. The pilot was conducted in conjunction with the established CIWMB Used Oil Recycling Program. The CIWMB was allowed to expend up to $120,000 for each year of the 2-year pilot program, beginning July 1, 1995, and was required to report the results of the pilot by November 1, 1997. Information concerning the barriers to used oil filter collection from the public was gathered from a wide variety of sources including pilot program participants as well as from used oil grantees, filter haulers and processors, and filter manufacturers. The pilot program allowed the CIWMB to explore methods and techniques to overcome identified barriers. This report presents the findings and conclusions from the pilot program, a recommendation for future action, results of the pilot effort, a summary of pilot expenditures, and summaries of participant efforts.

FINDINGS

The following findings were made as a result of the pilot program and prior experience of the CIWMB concerning used oil filter collection from the public:

[1] Personal contact-Greg Griggs, Executive Director, Filter Manufacturers Council, 2/97.

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- Compared to used oil collection, there are few opportunities for the general public to recycle filters. Prior to the pilot program, few local governments were providing filter collection opportunities other than infrequent household hazardous waste (HHW) collection events and several permanent HHW collection facilities. Currently there are over 500 drop-off opportunities for the public at government-operated sites and business locations. Many of those businesses charge the public to accept filters, limit the number accepted, and are reluctant to advertise. And many of the government-operated events are infrequent and locations are not convenient.
- There is a lack of public knowledge of the recyclability of filters and the environmental impact of illegal disposal. Most individuals believe that it is acceptable to dispose of used filters in the trash. The public disposes over 17 million used oil filters each year.
- Few local governments are likely to promote filter collection due to the cost of hauling. Local government program operators are very interested in incorporating filter collection into their used oil efforts but many can not do so in any significant way without adequate funding. Local governments are reluctant to advertise that filters are recyclable without locations for the public to recycle.
- Few businesses have elected to collect filters from the public because of the cost of collection and hauling. Many of the businesses that are accepting filters have done so because of some form of cost reimbursement from local governments (used oil grants or as a result of the pilot funding). While the filter manufacturing industry interest in promoting collection is high, there is a reluctance to provide financial support.

CONCLUSIONS

The conclusions presented below were formulated as a result of the findings and the efforts to address the barriers and issues concerning public collection during the pilot. The low number of collection opportunities and the lack of public knowledge are the most significant barriers to increased collection of used oil filters from the public.

- The principal barrier to establishing and maintaining collection opportunities is the cost of hauling. Businesses are increasingly motivated to collect filters as reimbursement approaches the hauling cost (average of $0.28 per filter).
- The public is very reluctant to pay a disposal fee to a business for accepting used oil filters. Similar to used oil collection, the public is most motivated by convenience (close location and open weekends and evenings) and free disposal. Because of the significant hauling cost, over 25 percent of the businesses surveyed charge the public between $.25 to $2.50 per filter with the majority being $1.00.
- The most effective way to provide filter collection opportunities is through local government program funding and public/private partnership development. Local governments can efficiently incorporate filter collection into all aspects of their used oil programs as can the CIWMB.
- The most successful collection efforts included free collection, advertising and the support of local government programs. Any outreach focused at the target audience of

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the oil-changing public was effective for promoting both oil and filter recycling. As is the case for used oil, the public is most motivated by convenience and free acceptance.

- Partnerships with large retail businesses and major service station operators can be most effectively developed by the CIWMB. Capturing major operators as participants would provide the most efficient outreach opportunities. Auto parts retailers are the most valued locations for used oil and filter collection because a majority of the public buys their oil and filters there.
- Few individuals adequately drain used filters leaving an estimated average of 8 ounces of oil per filter. The 17,000,000 filters annually discarded by the public contain at least 1,000,000 gallons of used oil. This represents 5 percent of all the used oil currently discarded by the public (the principal focus of the used oil program efforts). Hence, it is reasonable to propose that 5 percent of the used oil revenues be applied toward a filter collection effort. The used oil fund revenues exceed $20,000,000 per year, giving $1,000,000 as a reasonable level of support for filter collection.
- A statewide effort is required to address the used oil filter disposal problem and meet the needs of Californian's who change their own motor oil and filters. Local governments lack the resources necessary to meet this challenge and businesses and industry are reluctant to support collection because of significant hauling costs.

OPTIONS

The most prudent solution to address the statewide need would be an effort that results in the largest number of used oil filters recycled with the least amount of funds and staff resources being allocated towards the effort. In addition, for efficiency, any program developed should be integrated with the CIWMB's existing Used Oil Recycling Program as well as local government used oil and HHW programs to the maximum extent possible. Three options to consider are as follows:

Option 1—Status Quo

Maintain the existing efforts being implemented by local governments with limited available funds in lieu of creating a formal program. The CIWMB could encourage local governments to allocate used oil block grant funds towards filter collection, but most local governments cite that this would be at the expense of their used oil efforts. While several local governments have begun incorporating filter recycling into their programs, these instances are few compared with the level of collection opportunities needed. The decreasing amount of HHW funding available to local governments and the lack of industry/business voluntary support for filter collection will result in very limited collection opportunities statewide. While this approach would require the smallest allocation of funds and the least amount of staff resources, it would also result in the fewest number of used oil filters recycled.

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Option 2—Administrative Solution

Operate a statewide effort by administering a filter program that provides funding to local governments and develops statewide public/private partnerships and advertising and outreach efforts. An administrative effort could be created by allocation of opportunity grant funds to local governments for establishing and maintaining opportunities for the public to recycle used oil filters at no charge. The effort can be run in conjunction with the used oil program for great cost efficiency. Funding for personnel and materials and supplies to support such an effort would need to be appropriated to the CIWMB. A $1,000,000 level of funding for a statewide filter collection effort is reasonable based on the proportion of used oil contained in discarded filters. It is anticipated that such a solution will result in an adequate number of convenient recycling opportunities for the public and provide the advertising and outreach which results in a significant number of filters being recycled.

Option 3—Legislative Initiative

Propose a legislative initiative to impose a recycling assessment on the sale of filters at the manufacturer level (of all filters sold or only those sold to the public). Based upon five years of used oil revenue collection experience, the cost to collect revenues (including collection, refunds, audits, etc.) from the number of filter manufacturers involved is estimated to exceed $400,000 per year. A charge of $0.03 for every filter sold in the state (52.6 million in 1996) would generate a revenue of $1.5 million dollars. A charge of $0.08 for every filter sold to the self oil-changing public (19 million per year) would generate the same amount. The administration cost to collect revenues to support a $1,000,000 program is out of reasonable proportion with the net revenue (about 25 percent). By applying a recycling assessment specifically on filters, there may be pressure to have a rebate/incentive payment system similar to that for used oil. Any incentive amount would result in the need for a higher assessment at the sale, as well as a higher administrative effort. This would also be disproportionate to the cost of the effort (a filter program parallel to that of oil would require revenues exceeding $2.6 million generated by a $0.14 per filter assessment).

The filter manufacturing industry has voiced opposition to any fee based approach applied at the manufacturing level even though there would be a "level playing field" for all manufacturers[2]. Collection at the retail level for filters purchased directly by the public would be grossly inefficient considering the cost to collect revenues from over 50,000 businesses.

RECOMMENDATION

The administrative solution appears to be the best option to address the statewide need for filter collection opportunities. The filter manufacturing, oil manufacturing and used oil recycling industries support the use of a reasonable amount of used oil funds for the collection of filters. A $1,000,000 funding level is prudent considering the amount of oil disposed in the used oil filters discarded by the public. Used oil funds are available to finance such an effort with little impact on other program elements. The CIWMB should allocate $800,000 from local assistance monies

[2] Filter Manufacturers Council (FMC) Environmental Committee Meeting, 9/96, personal contact-Gregg Griggs, FMC, 7/96.

(from used oil promotional funds) toward this effort and support a BCP and budget act language (or legislative change) to provide the staffing and resources to support this effort beginning in the 98/99 fiscal year. To maintain the momentum of the pilot and the existing filter collection locations, the position should be administratively established on January 1, 1998 (the current position term ends December 31, 1997).

The underlying assumptions to meet the statewide need are outlined below:

- To provide an adequate level of service to the oil changing public, it is assumed that at least 1,200 opportunities are needed statewide (at least half of the 2500 used oil collection sites currently in place). Due to convenience to the public, retail auto parts stores should be the primary sites to establish collection opportunities.
- The initial number of filters to be targeted for collection is 1,500,000 with an additional 500,000 each year. With 1,200 sites and 200 filters per drum, the average number of drums generated per site per year would be about 6. Assumptions for growth were made as follows: many auto service sites will become self supportive over time (because of number of filters received from the public is small compared to the number generated by the business), new sites will be added each year, and the number of filters collected at each site will increase.
- The average hauling cost for a drum of uncrushed filters is $55 from a range of $35 to $95 statewide (September, 97). Assuming that each site generates 6 drums per year gives the accumulated hauling cost as about $400,000 per year (1,250 sites x 6 drums x $55).
- Local governments expend over $5,000,000 on used oil advertising, education and outreach efforts each year. Incorporating filters into these used oil efforts is highly efficient. It is assumed that at least 5 percent of the current level of the used oil effort is a prudent level for filters, giving $250,000 per year.
- The level of local government effort should also be at least the 5 percent level. Local governments expend over $3,000,000 per year on internal resources. Hence a $150,000 level directed at filters is prudent.
- The CIWMB would incur administration expenses to support a statewide effort. There is significant workload in grant administration to local governments as well as statewide outreach and development of business participation. The level of effort has been detailed elsewhere as 2 PY[3]. The cost of this level of support is $200,000 including staff, contracts, materials and supplies.

BACKGROUND

The background section contains the pilot program as envisioned and operating results as well as the collection, processing, and recycling cost information used to formulate the conclusions and recommended approach. The pilot expenditures and resources and information sources are also given. The vision for the pilot program was compiled from many years of experience with HHW and used oil collection efforts. Prior to the legislative initiative to provide for a pilot study, the CIWMB had recognized that there were key issues and barriers to filter collection from the

[3] 98/99 BCP

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public. However, the CIWMB lacked the resources and staffing to study the problem in significant detail. There were a few parameters in statute that governed the pilot program. Communication with the Authors office was made several times to clarify the legislative intent of the pilot and to gain comfort with the CIWMB vision and plans for conducting the pilot. At the pilot onset, it was accepted that success or failure of any given method or effort would yield valuable information. It was accepted that through conducting the pilot, the CIWMB should explore any reasonable methods and techniques to overcome identified barriers.

The Pilot Program

The Pilot as Envisioned

The overall goal of the pilot program was to assess the barriers to collection and determine whether a statewide program was needed to address the problem. The pilot was conceived with the premise that opportunities be developed for the public to recycle used oil filters in conjunction with the CIWMB Used Oil Recycling Program. Collection opportunities would include used oil collection centers, curbside collection programs and household hazardous waste collection facilities. Participants would be chosen from interested applicants to reflect the demographic and sociological attributes of the state. Formal participants would be required to keep a log, advertise, and submit quarterly reports. Certified center participants would also be required to offer a recycling incentive of 4 cents per filter to the public, which would then be reimbursed by the CIWMB. Local governments would be eligible for grants to pay the costs to provide collection and advertising, and would report on their efforts. The individual participant experiences and grantee efforts are presented at length in summaries included as Appendix A to this report.

The Pilot Outcome

Implementing the pilot proved to be much more difficult than was expected. Many aspects of the pilot were unrealistic and difficult to attain. By remaining flexible during operation of the pilot, the ability to respond to opportunities and test methods to overcome barriers was maintained. As outlined below, initially there was very little interest in participation in the pilot. By appearance, the initial efforts were unsuccessful, however, the information gathered was instrumental in helping to determine the barriers to filter collection. Subsequently, staff was able to gain the support and participation of both local governments and businesses. As a result, the principal barrier to providing public collection was determined and the most prudent option to address it was developed.

The pilot effort was initiated in early 1995 (before the pilot officially began and funds became available) by identifying potential participants. Initially, the few certified centers already known to accept used oil filters from the public were contacted followed by those centers performing automotive service. These were targeted because they were already collecting filters and paying hauling costs. Unfortunately, only a few of these businesses agreed to participate in the pilot. Cost and inconvenience were the main reasons for non-participation, as well as the requirement to offer the $0.04 per filter incentive to the public.

Before July 1, 1995 staff learned that oil and oil filter reimbursement claims paid by the CIWMB to participants could not be combined. Issuing separate checks would not be fiscally prudent given that the cost for the State Controllers Office to print checks (not to mention the internal accounting cost at the CIWMB) would in nearly every case, be more than the amount of the

claim. The determination not to reimburse participants the $0.04 per filter recycling incentive took away the only direct way the CIWMB could financially entice a business to participate. The decision was then made to not require that participants offer the 4-cent incentive to the public. Experience to date had shown that free and convenient used oil collection locations were a greater motivator to the public than the 4-cent per quart incentive. It was assumed that this would also be the case for filters.

A major quick-lube chain was contacted to participate early on. A significant issue for this business was the need to set a limit of 3 filters per day per person. The reason given was that they were already unwillingly receiving a notable amount of used oil from small local businesses and wanted to avoid this problem with filters. Title 22 of the California Code of Regulations, Section 66266.130 (which specifies proper management and transportation guidelines for used oil filters) does not limit the number of filters which can be transported by householders, hence staff decided that it was in the best interest of the pilot not to place limits on collection. The operator of this chain of stores subsequently chose not to participate.

By mid summer of 1995, only a few centers had agreed to take part in the pilot. A notice about the pilot was then sent to all Certified Used Oil Collection Centers (1,300 at that time) to solicit potential participants. A survey about oil filters and anti-freeze acceptance was included. While the notice generated over 150 telephone inquiries to staff, it did not result in any additional pilot participants. Upon hearing there was no reimbursement, most operators quickly became disinterested. The reluctance to participate in the pilot provided staff with valuable information on the principal barrier to public collection, i.e., cost.

More than 30 local governments that were believed to be incorporating filters as a part of their oil programs were directly contacted, but for various reasons, chose not to take part in the pilot program at that time. Some of the reasons given were a lack of funds and staff time to dedicate to oil filter recycling and no centers were willing to accept filters from the public. In essence, many locals were so involved in implementing their oil programs that it was simply too soon for them to consider addressing oil filters. All local government grant recipients (400 at that time) received information and a request for assistance in the pilot. Local governments were recognized as valuable in locating participants, assisting with costs to establish filter collection in conjunction with used oil collection efforts and providing public advertising and outreach. In addition, local governments were eligible for grant funding from the CIWMB to pay the costs to establish filter collection at businesses, addressing the major barrier that the CIWMB faced in implementing the pilot

Contact was made with several major automotive service and parts related chain operators. One major tire/auto service chain initially expressed interest as long as hauling charges could be reimbursed. The operator revealed that filters would be accepted, but did not want the fact advertised to the public. As a result these sites were not included in the pilot. Chief Auto Parts and Kragen Auto Parts were initially interested, however, each requested setup and ongoing cost reimbursement directly from the state to participate. Because the CIWMB is unable to directly pay a private business for costs other than what was specifically outlined in the Act (i.e., reimbursement of recycling incentive based on gallons of oil or number of filters recycled), staff offered to coordinate with the local governments who would be able to assist with costs. Although several local governments were willing to assist, Chief decided to pay their own expenses rather than individually deal with 58 county governments (or several hundred city governments) and the associated paperwork. Chief stated that they planned to begin filter

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collection in the near future and would handle costs on their own. Despite numerous attempts by staff to assist Chief. to date this has not occurred. Kragen was more receptive to the local government funding option. Through filter pilot grants to several local governments. over 75 Kragen stores have begun to provide filter collection in six counties. Even though this occurred late in the pilot program. a great deal of information on the issues and the costs of collection was gathered during the processs of linking county staff and Kragen.

As a result of the two-year pilot effort. 7 curbside programs and 14 used oil collection centers became formal participants. Many other centers provided information without formally participating. Ultimately seven local governments participated in the pilot. Five grants were awarded for a total amount of $41.643 over the two-year pilot term. The funds were used to purchase plastic bags for a curbside program. conduct public outreach and to pay for hauling costs.

Cost Information

Collection, Hauling, and Processing Costs

The cost of recycling a used oil filter is based upon the costs of collection. transportation. and processing. Ascertaining these costs helped the CIWMB to determine which barrier to recycling was predominate and if there was sufficient infrastructure in place. Information gathered through the pilot showed that there is sufficient transporting and processing capacity in the state and that the most significant barrier is the cost to a generator for hauling. Specific information on types of collection containers used and processing methods and costs can be found in Appendix B.

Costs for businesses. such as service stations and quick-lubes, may include staff time to drain and crush filters. the cost of the crusher. and the cost of electricity and maintenance. An environmental fee charged to service customers typically offsets the costs. including hauling costs. The environmental fee is regulated by the Bureau of Automotive Repair and may only be as much as the true cost of management and disposal of generated hazardous wastes. An auto repair or oil change business generates filters as a part of their service activities and should have no set up costs to take filters from the public. Typically. these businesses only request some assistance with hauling costs. Most auto parts stores do not collect filters as a part of their business and typically need a collection drum as well as ongoing assistance with the cost of hauling. As a result, the net cost of filter recycling is higher for a business that does not perform automotive service. Auto parts retailers can not charge the environmental fee from customers to offset costs.

Used oil filters are usually placed into a 55-gallon drum by the generator or collector. Some generators will crush filters to recover used oil and to save space. A 55-gallon drum will hold approximately 200 uncrushed filters or 600 crushed filters. The average hauling cost in California is $55 per drum (9/97). The hauling cost is typically the same whether the filters are crushed or uncrushed, but can vary depending upon the quantity of drums and location. Drums are transported to a filter processor, however, some haulers are processors as well. Processors typically charge haulers between $9 and $15 per drum. Processing includes shredding cubing, incinerating and dismantling. The common destination for the recovered steel from each of these methods is a steel mill. TAMCO operates a steel mill that has been accepting crushed or cubed filters. as well as. shredded filter metal since 1991. TAMCO currently recycles 12 million filters

annually to form construction re-bar and pays between $65 and $85 per ton for shredded filter metal provided that the hauler can certify the destination of the paper media. There is not currently a payment nor is there a charge, for crushed or cubed filters.

Pilot Program Expenditures

The following outlines the pilot program expenditures from the $240,000 appropriated to the CIWMB for the two-year program:

Local Government Grants: $41,643 was awarded to six local governments to assist with the costs associated with filter recycling opportunities and advertising.

Filter stickers: $350 was spent for 500 stickers (6"x5 ½") designed for collection centers to affix to their certified center signs. Many centers, and local governments on their behalf, requested the stickers.

Staff: $115,133 was expended on (1PY for 2 years) salary and benefits.

Student Support Contract: $11,175

General Expenses: $424

Total: $168,725

REFERENCES AND INFORMATION RESOURCES

The following is a list of references, aside from participants and local governments, that staff received technical assistance and information from through the pilot.

Greg Griggs-Filter Manufacturers Council
Leonard Robinson-TAMCO
Lori Baskind-CSK Auto
Gilbert Ross-Delta Four
Claudia Moore-Department of Toxic Substances Control
Sue Tracy-Department of Toxic Substances Control
Doug Parnell-Filtertek
William Anderson-Curbside, Inc.
Tammi Shank-Commercial Filter Recycling

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APPENDIX A
PILOT PARTICIPANT SUMMARIES

The following narratives provide a summary of the information provided by program participants and the data compiled by staff throughout the program. The summaries include information relating to the amount of used oil filters received, transportation fees, collection methods, advertising costs, frequency and methods utilized and any reported problems encountered by program staff or associated contractors.

Collection Centers

There were 14 collection centers that participated in the pilot program. In general, advertising played a key role in the effectiveness of any particular collection effort (the more advertising conducted, the more filters collected). The following information represents summaries of each participating center effort.

Bayside Oil Inc. II

This collection center is a used oil hauler and transfer station. Although non-certified, they have provided free collection of used oil and oil filters to the public for many years. Advertising is paid for by a CIWMB grant. Forms of advertising include weekly classified ads in the used car section, point of purchase flyers and oil jug labels. This center keeps a log of customers bringing in filters for recycling. They feel the reason the public does not complain about the log is because only a name is required. Santa Cruz County will reimburse them $1 for every filter collected from the public. The log is required for documentation. Filters are brought in to the center in plastic bags, buckets and various other forms of containment. They received an average of 118 filters and 628 gallons of used oil per month. This equates to 1 filter for every 5 gallons of used oil

One comment provided by this center is that sometimes the filters are brought in un-drained or full of water from sitting outside. Filters are crushed and transported to TAMCO for recycling.

Burbank Recycle Center

Burbank Recycle Center began collecting used oil filters in July 1995 when the pilot program began. Because the drop-off area is un-staffed, the log requirement created a challenge for the center. Center staff came up with an idea to encourage recyclers to voluntarily complete the log. Through signage at the drop-off area, recyclers are informed of a monthly drawing. All they have to do to enter is recycle and sign the filter log. Winners are chosen from the filter log and are given a T-shirt and tote bag

The center regularly and extensively advertises used oil filter recycling. The message has been sent out to residents in utility bills, telephone book yellow pages, Center newsletter sent out every six months to all city residents, supermarket shelf tags and movie theater ads. Center staff have appeared at Rotary Club luncheons, high school auto body classes, staffed a table at an Airplane Memorabilia Show, citywide picnic, D.A.R.E. (dare to keep kids off drugs) exhibit and Earth Day events. Center staff is looking into cable television advertising.

Because the center advertises so frequently, and in so many diversified mediums, it is difficult to determine if the number of filters brought in by the public increases in relation to current advertising campaigns. They have noticed a surge in recycling after a semi-annual newsletter is sent out.

The center collects an average of 267 oil filters and 1,734 gallons of used oil per month. This equates to a ratio of 1 filter for every 6.4 gallons of used oil. This collection center offers a $0.04 incentive for each used oil filter brought in for recycling. However, the offer is made via a sign posted at the drop-off area and the amount of people requesting the money is negligible.

Because the oil/oil filter drop-off area is un-staffed, the only additional cost for the center to add used oil filters to the list of materials they collect was the cost of hauling. They plan to continue collecting filters even though the pilot program is over.

Through a Waste Board grant, the center purchased an all-in-one type container, at a cost of $5.20 each, to give away to city residents. The container has a drain pan, can be used to drain a used oil filter, and may be used to transport used oil and filters to the center or put out for curbside collection.

The uncrushed filters are transported by Delta Four for $50 per drum to their facility for recycling.

San Joaquin County

The centers outlined below are all located within San Joaquin County and were encouraged to accept filters by the county. In lieu of a reimbursement for filters, these centers agreed to become part of the pilot if the county would provide them with a filter crusher. Other centers were given crushers by the county but did not participate in the pilot program. In addition, the county provided all of the advertising for the centers. Forms of advertising utilized included newspaper ads, radio and television public service announcements and a hotline number publicized on billboards and on flyers given out to the public.

Montezuma Fire Station. This pilot participant began accepting public filters in September 1996. The center feels that providing the collection of used oil filters from the public is a very valuable service. As an agency obligated to provide emergency response, the Fire Chief believes the presence of a collection location will lessen the amount of calls the station will need to respond to regarding spills.

The center offers the $0.04 incentive to the public but claims less than 25 percent accept the money. Most are just thankful to have the free service available. A newspaper advertisement was placed and paid for by the county on the Fire Departments behalf. This center receives an average of 16 used oil filters and 37 gallons of used oil per month. This equates to a ratio of 1 oil filter for every 2.3 gallons of used oil. While they have not received a great number of filters, the ratio of oil to filters is very close to the ideal relationship of 1 oil filter for every 1 gallon of used oil. This centers success may be contributed to the fact that customers bringing in oil without a filter are reminded not to discard their filter, but to bring them in next time for recycling. The used oil filters are crushed and picked up at $45 per drum by Filter Recovery Systems.

Linden Unified School District Bus Garage. This center, located at the school district bus garage, began collecting filters in July 1995. Like the Fire Department, they began taking filters with the arrangement that the county pay transportation and advertising

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costs. While not much information was provided by this center, they did report receiving an average of 7 used oil filters and 6 gallons of used oil per month. This equates to a ratio of .86 oil filters for every gallon of used oil collected. Filters are transported by Filter Recovery Systems at $45 per drum.

Wright's Petroleum. Wright's also began taking filters at the pilot program's inception. They received an average of 38 filters and 956 gallons of used oil from do-it-yourselfers and farmers per month. This equates to an average of 1 filter for every 25 gallons of used oil. Filters are transported by Filter Recovery Systems at $45 per drum. The business owner believes his business would remain certified if filter collection became mandatory for certified centers but feels a $0.10 per filter incentive would help encourage him.

K & M Pontiac Cadillac GMC Truck. This auto dealership only provided one quarterly report through the pilot program. They did not report receiving any filters from the public during this time. Perhaps if more advertising were done, in addition to what was conducted by the county, the center would have had more success with the pilot program.

Mataga Olds Buick. While this center submitted reports for three quarters, they did not receive any used oil or oil filters from the public. Again, perhaps more advertising would have produced some results.

Kern County Special Waste Facility

This hazardous waste collection facility began accepting filters October of 1995. Filter numbers included on their quarterly reports include not only the filters from the Special Waste Facility, but also filters collected from 3 remote areas of the county. These un-staffed sites, are equipped with filter pods. The pods are weather proof, steel containers that are equipped with a self-closing door. The pods are apparently very useful for more rural locations.

Throughout the pilot, Facility staff was very diligent about providing quarterly reports and advertising. Forms of advertising utilized by this center include newspaper ads placed in English and Spanish newspapers, radio public service announcements, flyers given out at Household Hazardous Waste Collection events, brochures distributed to local businesses, and a newsletter sent out to county residents. These various forms of advertising were not specific to used oil filters, so it is difficult to estimate the exact dollar amount dedicated to used oil filters. Facility staff also reserved an 8 by 30 foot billboard at Mesa Marin Speedway in Bakersfield. The billboard stayed up for the season at a cost of $5,000.

The filters collected from the public are crushed and transported by Facility staff to Golden State Recycling, a metal recycler, in Bakersfield. An average of 146 oil filters and 561 gallons of used oil were collected per month. This equates to a ratio of 1 filter for every 4 gallons of used oil.

Comments provided by Facility staff include a request for additional funds to fund public oil filter collection containers. Even though the pilot is over, the facility plans to continue to provide used oil filter collection for the public.

Gold Country Service Center

Gold Country Service Center began accepting filters January 1996. They advertise the centers acceptance of used oil filters in a newsletter sent out to 700 customers and distributed at different auto related shows.

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This business only received a negligible amount of used oil and filters. They received an average of less than one used oil filter and less than one gallon of used oil per month. This equates to a ratio of 1 filter to 1 gallon of used oil. Sacramento Filter Recycling transports their uncrushed filters at $55 per drum. The transporter charges $25 more per drum if the filters are crushed.

Dave's Automotive

This business began accepting used oil filters in July of 1995. All advertising was done cooperatively with a local non-profit group. Types of advertising include direct mail brochures and bi-annual newsletters that are sent out to residents of 3 surrounding cities. Four oil filters and 42 gallons of used oil were received on average per month by this business. This equates to a ratio of one filter for every 11 gallons of used oil. Asbury Environmental Services transports the uncrushed filters at $65 per drum.

All Car Center

The one report submitted from this business shows an average of 16 filters and 32 gallons of oil were collected per month. This represents a ratio of 1 filter for every 2 gallons of used oil. The center did offer the $0.04 incentive but claimed no one accepted the money. An ad was placed in a local newspaper announcing filter collection. Their uncrushed filters are transported at $45 per drum to Vortex for recycling.

HSS Recycling Buyback—Buellton and Santa Maria

These two collection centers began collecting used oil filters from the public in September 1990. These recycling centers are very avid about advertising to the public. Forms utilized include newspaper ads, yellow pages ads and newsletters.

Unfortunately even with the great deal of advertising they do the amount of oil filters brought in by the public is very low compared with the gallons of used oil. The filters collected by the centers are crushed and transported by center personnel to Stephan Enterprises, a metal recycler, at no cost to the center.

Comments provided by center staff include imposing a redemption value on used oil filters to encourage the public to recycle.

Camarillo Quick Lube

This business began collecting public oil filters May 1995. Two quarterly reports were submitted during the pilot. The first report showed no filters received and the second reported 20 oil filters and 30 gallons of used oil. This equates to a ratio of 1.5 filters for every gallon of used oil. Black Gold Industries transports the crushed filters at $30 per drum. The business offered the $0.04 incentive for oil filters but claimed less than 50 percent accepted the money. The center was unaware that they were supposed to advertise.

The center claims they will continue to accept filters even though the pilot is over. They believe the biggest obstacle to filter recycling is getting across to the public.

Kragen Auto Parts

This company has been voluntarily accepting used oil from the public at no charge for many years and was very interested in offering filter collection. While they were willing to provide the service, they requested assistance with the costs associated with filter recycling. While Kragen

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realized the Board could not reimburse them directly they still wanted to explore other options to provide filter collection for the public. A viable option was to work through the local governments who would be able to directly pay Kragen's recycling costs. Kragen was so enthusiastic about the idea that they asked staff to send notice to all grant recipients expressing their willingness to work together. A newsletter was sent out to all 400 grantees. Several local government grantees responded to this request. The following includes the local governments who agreed to work with Kragen.

Los Angeles County. The Los Angeles County Department of Public Works, the agency responsible for implementation of the CIWMB block grant, willingly agreed to assist Kragen with filter collection costs. A CIWMB grant was augmented by $14,850 to enable them to implement a 6-month program in all 15 of the Kragen Auto Parts stores located within the county. The stores were all provided with a filter drum equipped with a special hinged self-closing lid. The lids were purchased by the county at a cost of $58 each. In addition, the county agreed to pay for all of the recycling costs for the length of the pilot. The county spent $10,288.65 on advertising. Because this program did not begin until May 1, 1997, the block grant was extended through October 30, 1997 to allow them to conduct the full 6 months of the program. Once the six-month program is over, Kragen Auto Parts will assume the costs. Since these stores got started so late, no filter data has yet been collected.

Santa Cruz County. Three Kragen stores in Santa Cruz County accept filters from the public. Set-up charges and hauling costs are all paid for by the CIWMB block grant funds. Although the county has advertised in newspapers, created oil jug labels and done point-of-purchase tear off sheets, participation is still relatively low.

Sacramento County. The fifteen Sacramento County stores began filter collection May 1, 1997. All costs were handled through an existing CIWMB block grant so no additional pilot funds were necessary. Kragen will assume costs October 1, 1997 upon the grant's completion. Ramos Environmental Services will transport the filters for recycling at $65 per drum.

San Diego County. There are 34 Kragen stores located in San Diego County. The county agreed to pay for drums and lids for all 34 stores, and hauling costs for all stores located in the un-incorporated parts of the county. The City's of Oceanside and El Cajon will pay their own hauling costs and the City of San Diego will fund hauling costs for all other stores.

City of Fresno. The City of Fresno has five Kragen stores within its boundaries. Funds from the CIWMB fifth cycle block grant will pay $40 for the initial collection drum for each store and will pay $50 per filter pick-up at each store, approximately three times during the year. The city has agreed to fund this program until June 30, 1998. The city hopes the program will continue with future block grant funding.

Monterey County. Four Kragen stores are located in Monterey County. Ecology Action, a non-profit organization, is working with the county to educate the public about used oil and oil filter recycling. Ecology Action will pay the annual environmental fee of $180 (for each store which does not generate their own filters and is willing to accept them from the public), the initial set up fee of $35, provide a drum with a locking lid, if necessary, and pay hauling costs.

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Curbside Programs

City of Santa Barbara

Community Environmental Council, a nonprofit entity, works with the City of Santa Barbara and the unincorporated areas of Goleta and Montecito to provide curbside collection. The program serves 29,000 households. Used oil filters became a part of the program in 1993. Plastic buckets were purchased for curbside residents to put used oil filters into. The buckets are equipped with a lid and imprinted with instructions on how to prepare a used oil filter for recycling and a hotline number in both English and Spanish. Two different waste management companies cover the route. Each curbside vehicle was retrofitted with a 5-gallon plastic bucket fastened to the truck to hold oil filters. The cost to prepare the trucks for the collection of filters was negligible. Filters are transported by either, Black Gold Industries or Antifreeze Environmental Services at $50 to $75 per drum. One waste hauler crushes the filters and one does not. An average of 1,707 oil filters and 3,230 gallons of used oil are collected per month. This equates to a ration of one oil filter for every 1.9 gallons of used oil received.

A grant augmentation was awarded in March of 1996, with used oil filter pilot program funds, in the amount of $1,200 to purchase 5,000 "Recycle your filter also" stickers. The purpose of the sticker was to bring awareness to curbside oil recyclers that filter collection is also available. In June 1996 Center staff informed Board staff that the stickers would not be purchased because used oil and oil filters would be eliminated from the collection program in July of 1997. Apparently the move to automated wet/dry collection would not allow for the continuation of the curbside oil and filter program. The city optimistically anticipates that the used oil and filters will now be taken to the numerous collection centers located throughout the county.

City of Santa Monica

Santa Monica's curbside program has accepted filters since 1992. Residents are instructed to put their filter in a plastic bag (which can be obtained from the curbside driver) and set it next to their oil jug on recycling day. An average of 62 oil filters and 663 gallons of used oil is collected. This equates to a ratio of one oil filter for every 10.7 gallons of used oil.

The city advertised the collection of used oil filters in the Santa Monica Seascape Newspaper, and the Santa Monica Outlook Newspaper. An English, Spanish flyer covering the topics of oil and filter recycling was produced and distributed to the parents of 5,075 elementary school children.

City of Baldwin Park

Baldwin Park began curbside collection of used oil filters December of 1995. The program serves 20,000 households. In March of 1996, the city received an augmentation to their curbside grant from the Board in the amount of $3,443 to purchase 10,000 sturdy, imprinted zip-lock bags for the residents to put their filters in. The cost per bag with imprinting was $.318 each. The total first year costs, including a two-year supply of bags, were $11,147. Costs include: $4,500 for partial compensation of the refuse hauler for the service; $28 for the rental of the used oil filter drum; $568 for the collection services by the used oil filter recycler; and $3,443 for the plastic bags. All costs, except the bags, were paid for by the city.

Curbside residents must call the city's waste hauler for filter storage bags, or upon scheduled pick-up of used oil at the curb, the hauler will leave a few bags for used oil filter storage. The

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city also supplies bags upon request at city Hall and at special events. An average of 8 used oil filters and 148 gallons of used oil are collected per month. This equates to a ratio of one oil filter for every 18 gallons of used oil collected.

Six months into the program, the city realized that they were giving away many more bags than they were getting back. They realized that residents were putting the filters in the bags on top of their garbage and they were getting thrown away. So, they began to assess methods to better inform and instruct curbside residents

The collection of used oil filters is identified on the city's 24-hour hotline, and billing inserts have been sent to each resident eligible to receive curbside service. Advertisements have also been placed in the city newspaper and at promoted at events. Delta Four transports each drum of uncrushed oil filters for $45.

Comments provided by the contractor regarding participation obstacles include (1) inadequate publicity, (2) haulers do not always follow through on pick-up when requested by the residents, (3) program is misunderstood by some residents, (4) lack of incentive program.

Santa Cruz County

All five of the county's curbside programs collect used oil filters. Four of the programs ask residents to put their drained filters into a zip-lock type bag at the curb. In contrast, one program, which began October 1991, asks homeowners to put the drained filter into the box the new filter came in. They have had no reported problems with leaks. Advertisements have been placed in the classified section of local daily papers and oil jug labels have been produced in addition to point-of-purchase flyers. All of this advertising was done in conjunction with advertising already being conducted for used oil so no additional cost was incurred. The uncrushed filters are transported by Bayside Oil II, Inc. to TAMCO. All costs are paid for out of existing grants. This program receives an average of 145 oil filters and 540 gallons of used oil per month. This equates to an average of one oil filter for every 4 gallons of used oil.

Valley Curbside Recycling

This program began collecting curbside filters in 1990 and currently serves 13,000 households. Instead of using a plastic bag for filter collection, Valley Curbside received plastic containers, at no charge, from Subway Sandwiches. The containers, equipped with a lid, originally held barbecue sauce and were destined for the garbage can. Valley had a sticker made for the bucket that explains the recycling process to residents and gives credit to Subway for the donation. Containers of this type typically cost $0.70 each.

Filters are picked up from the curb and placed into a five-gallon bucket in a rack on the curbside truck. The program operator claims they have encountered filters leaking that had been placed into plastic bags at the curb. An average of 265 oil filters and 486 gallons of used oil are collected from the curb each month. This equates to a ratio of one oil filter for every 2 gallons of used oil. Various forms of advertising include weekly newspaper articles, brochures sent out to homeowners, and yellow pages ads. Filters are crushed and transported at no cost by Valley Curbside Recycling to Stephen Enterprises, a metal reclaimer.

Valley believes that if filters had a California Redemption Value on them it would encourage recycling. They also feel that if containers were provided for residents with curbside collection programs that this would also encourage the amount of filters recycled.

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City of Placentia

This program began September 1996 and serves 14,000 households. Since the program began an average of 20 oil filters and 120 gallons of used oil have been collected per month. This equates to an average of one filter for every 6 gallons of used oil. Residents are serviced by Curbside, Inc., a company that provides door-to-door pick-up of household hazardous waste. Homeowners call a hotline number to schedule pick-up of wastes. Different types of advertising that have been used to inform residents about the program include a door hanger, which was distributed by the California Conservation Corps and the Orange County Local Conservation Corps. Advertisements have been placed in the "Pennysaver" and Spanish radio spots in addition to cable television announcements have been placed. The uncrushed oil filters are transported to Safety-Kleen in Denton Texas for processing.

City of Santa Maria

RALCCO is a private company who contracts with the City of Santa Maria to provide curbside pick-up for its 35,000 households. The program began January 1, 1996. Residents are requested to put their used oil filter into a plastic bag and than set the filter and jug of oil into a five gallon bucket at the curb. Filters are placed into special compartment on curbside truck that has been retrofitted to hold oil and filters. The bucket acts as secondary containment to prevent spills. A form of advertising that has already been done includes newspaper ads, city newsletter and a flyer.

An average of 119 oil filters and 923 gallons of used oil are collected per month. This equates to an average of one oil filter for every 8 gallons of used oil collected. Filters are transported by Diamond Oil Company. Comments provided by the company include the request of a filter crusher, funds to pay for crusher operator and reimbursement of disposal costs. The company also feels the Board could provide filter funding and place radio spots in their area. RALCCO believes the biggest obstacles to making a filter program succeed include manpower funding, public education and 100 percent funding for disposal costs.

City of Sacramento

Staff began trying to encourage the city to incorporate filters into their curbside program in February 1995. They planned on adding used oil to their curbside program in April of 1995 therefore staff suggested they add filters at the same time. However, the city decided to wait until their used oil program became well established and then begin filter collection. The program officially began collection September 1, 1997. Residents are instructed to place the used oil filter in a plastic bag next to their oil jug on collection day.

Other Programs

The following provides information regarding programs that received filter pilot grant funds.

Alameda County

The county received an augmentation to their CIWMB fourth cycle block grant in the amount of $12,000 to add used oil filters to their advertising campaign. They planned to do newspaper and BART advertisements that would encourage the public to recycle used oil filters. All forms of advertisements would include the 1-800-CLEAN UP hotline number.

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Tuolumne County

A CIWMB fourth cycle block grant was augmented in the amount of $5,000 to allow the county to conduct advertising campaigns in several different types of media. Cable advertisements were done in addition to television and radio spots. They have seen a dramatic increase in the amount of filters collected. Over 8,000 used oil filters have been recycled since the program began in April of 1996.

The artwork for the public education campaign was Kragen Auto Parts. The artwork was placed in various newspapers throughout the affected areas. A press release was prepared by both, the Board's Public Affair's Office and the Los Angeles County Department of Public Works.

City of Santa Monica

A CIWMB fourth cycle Used Oil Block Grant was augmented in the amount of $6,350 in June of 1995. The augmentation was requested to purchase jug hangers, 3 Igloo containers and pay for filter recycling at local auto parts stores. While Kragen Auto Parts agreed to provide filter collection for the city, Chief Auto Parts was not interested in participating even though the city would pay the associated costs. Chief Auto Parts proclaimed that in lieu of providing filter collection on a store-by-store basis, they plan on providing statewide filter collection for the public in the near future and are willing to assume 100 percent of the costs. While the city did not purchase the Igloo containers they did have jug-hangers developed and the augmentation allowed the city to purchase drain containers with a capacity of 4 gallons of oil and 2 oil filters. In addition, the city has incorporated used oil filters into all used oil advertising.

Prior to the city's participation in the filter pilot program there were only 4 collection centers that accepted used oil filters from the public. Taking part in the pilot encouraged the city to focus on filters and include filters in their outreach and advertising. As a result of these efforts, the city now has 9 used oil filter collection locations.

APPENDIX B
CONTAINERS AND PROCESSING METHODS

Collection Containers

Used oil filters are brought in to collection centers or set out at the curb in various types of containers. The containers serve several purposes such as spill prevention. The following is a synopsis of different container types studied:

Sealable Plastic Bags

This is the most common type of container used to hold and transport used oil filters. These bags are easy to obtain by the public, or to provide by a local government. Several local governments provide bags for the residents in their jurisdictions to help make recycling safer and easier. The bags can be easily imprinted with recycling information, collection locations and a hotline number. Unfortunately, while being convenient, plastic bags are a one-time use type of container and may become a waste. They can also be quite expensive ($0.31 each) and can create more work for processors if they must be removed prior to processing.

Cardboard Filter Box

Used oil filters can be drained and put back into the box the new filter came in. This container is free, convenient, and ideal because it results in the least amount of solid waste. However, it is not as dependable as some other container types in preventing oil spills.

Plastic Buckets

Two curbside programs are currently using buckets or pails. Each cost about $0.70 each and may be equipped with a lid and or a handle. Buckets are beneficial because they can be reused, protect the contents from the weather, prevents spills and have plenty of imprint space. One drawback to this container option is that it may be utilized for another purpose besides the storage and transportation of used oil filters.

Other Containers

One manufacturer has designed a 4-gallon bucket which serves as an oil drain pan, used oil collection container and oil and filter transportation container. These all-in-one buckets sell for about $6.00 each. While having an expensive initial cost, these buckets are more durable and long lived then some other container types. This bucket appears better suited for individual transportation to a collection center than use at the curb.

Processing

Oil filters are processed in order to remove excess oil and produce marketable scrap steel. Filters are composed of, on average, just under a pound of steel, paper filtration media, and rubber gasket. Each of these components is recyclable. The steel can be sold to the scrap market to be formed into new steel products such as reinforcing bar (re-bar), service hole covers and paperclips. The paper media has a high BTU value and can be used as fuel in industrial boilers

and cement kilns. Rubber gaskets can be separately collected or combined with the paper material. The different types of processing include dismantling, shredding, densifying (cubing), and incinerating as outlined below:

Dismantling

There is currently only 1 filter dismantler in California. Only uncrushed filters can be processed by this particular method. The filters are cut open and then separated into their basic components of metal, rubber gaskets, paper media and oil. The paper media and rubber gaskets are shredded, pressed to remove the residual oil, fluffed, packaged and sent to a cement kiln (out of state) to be used as secondary fuel. The steel is sold to a local scrap dealer for about $60 per ton. About 240,000 filters are recycled in California each year in this manner.

Shredding

This method involves shredding the filter into small pieces. The steel is magnetically separated from the paper media, which is subsequently sent through a press to remove the excess oil. Shredding produces high quality scrap steel and recovers used oil and separated paper media. A significant barrier to the greater use of dismantling and shredding is the limited end market for the oily paper.

Densifying

Some processors densify used oil filters by crushing them into cubes. When melted, the bound up paper is destroyed at the steel mill. A cuber can accept both crushed and uncrushed filters, although uncrushed filters are best (uncrushed filters are more likely to bind together into a cube). Using over 25 tons of force, the cubing process forces remaining oil out of the filters. The cubes, weighing about 40 pounds each, are allowed to drain any free oil. The cubes are then transported to a shredder, metal re-claimer or steel mill for recycling.

Incinerating

This process involves the combustion of filters at a municipal solid waste incinerator. In 1995 the regulations regarding the transportation and storage of used oil filters (Title 22 of the California Code of Regulations, section 66266.130) were amended to include municipal solid waste incinerators to the list of acceptable destinations for filter recycling. However, the regulations state that the steel must subsequently be recovered and transferred to a smelter or other scrap metal processor for recycling. This method is more expensive than the other methods described and only one facility in California is accepting used oil filters for incineration at this time. The delivery charge is approximately $175 per ton, or $18 per drum of drained uncrushed filters. Current throughput averages 50 tons per month accounting for 1.2 million used oil filters annually.

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